

U.S. Department of Energy  
Portsmouth/Paducah Project Office

**Site Utilization and Management Plan  
for the  
Portsmouth Gaseous Diffusion Plant,  
Piketon, Ohio**

PPPO-M-211.1  
January 2008



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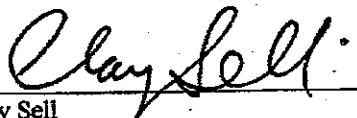
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APPROVED:

  
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Deputy Secretary

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## ACRONYMS

ACP	American Centrifuge Plant
CD	Critical Decision
CSB	Cold Standby
CSD	Cold Shutdown
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DR	Deposit Removal
DUF <sub>6</sub>	Depleted Uranium Hexafluoride
EM	Office of Environmental Management
FAR	Federal Acquisition Regulations
FY	Fiscal Year
GCEP	Gas Centrifuge Enrichment Plant
GDP	Gaseous Diffusion Plant
GFS&I	Government Furnished Services and Items
HEU	Highly Enriched Uranium
ID/IQ	Indefinite Delivery/Indefinite Quantity
LEU	Low Enriched Uranium
LL	Landlord
LPP	LATA/Parallax Portsmouth, LLC
NE	Office of Nuclear Energy
NFS	Nuclear Fuel Services, Inc.
NRC	Nuclear Regulatory Commission
PBS	Project Baseline Summary
PORTS	Portsmouth Gaseous Diffusion Plant
PPPO	Portsmouth/Paducah Project Office
S&M	Surveillance and Maintenance
SUMP	Site Utilization and Management Plan
TPMC	Theta Pro2Serve Management Company, LLC
UDS	Uranium Disposition Services, LLC
USEC	United States Enrichment Corporation
UMG	Uranium Management Group

## 1. INTRODUCTION

This Site Utilization and Management Plan (SUMP) has been prepared using the guidance provided in the U.S. Department of Energy (DOE) Acquisition Letter No. AL-2006-11, "Site Utilization and Management Planning," of September 27, 2006. This SUMP provides an update to the Portsmouth Gaseous Diffusion Plant (PORTS) SUMP issued in May 2003 to address acquisitions related to environmental restoration and infrastructure services. This updated SUMP provides information to allow for an assessment of the site-wide strategic implications of the upcoming acquisition(s), for decontamination, decommissioning, and remediation of the gaseous diffusion plant at Portsmouth.

The Department decided to proceed with decontamination, decommissioning, and remediation at Portsmouth in order to meet the Department's cleanup requirements for the Portsmouth gaseous diffusion plant under the 1992 Energy Policy Act. The Department approved Critical Decision - 0 in October 2005 to formally recognize the Mission Need for the decontamination and decommissioning (D&D) [and remediation] of the Portsmouth gaseous diffusion plant. The Department approved Critical Decision - 1 in August 2007 which established a Cost and Schedule Range and outlined a cleanup Alternative for the Project. This Site Utilization Management Plan has been prepared to provide a strategic overview of activities and interrelationships at the Portsmouth site. This overview will help inform decision-makers in developing an Acquisition Plan to describe the approach to acquire services to initiate the decontamination, decommissioning, and remediation project. The SUMP will also outline the relationship of the Portsmouth cleanup project to the Department's Strategic Plan. A more detailed understanding of the key programs and activities projected for the Portsmouth site can be found in the *Portsmouth/Paducah Project Office Ten-Year Site Plan FY 2007 - FY 2016* of April 2007, which is consistent with, and supplemental to, this plan.

This SUMP addresses the major overall DOE site missions of environmental cleanup, waste management (WM), depleted uranium conversion, deactivation and decommissioning (D&D), remediation, and long-term stewardship. The plan also addresses the planned uranium enrichment activities of the United States Enrichment Corporation (USEC). USEC is a private company that leases uranium enrichment facilities at Portsmouth from the Department. The future enrichment plans for USEC are focused on deploying a new gas centrifuge uranium enrichment plant known as the American Centrifuge Plant (ACP). The plant will utilize new high efficiency USEC centrifuge machines installed in the DOE centrifuge buildings that are leased by USEC. In general, the environmental cleanup mission is focused on the original gaseous diffusion uranium enrichment facilities on the eastern side of the site while the new enrichment mission is utilizing the DOE centrifuge buildings that were constructed in the 1980's on the southwest corner of the site.

To successfully accomplish these multiple missions at PORTS, PPPO integrates with several program offices, as well as, private industry initiatives. DOE program offices with mission activities at PORTS include:

- Office of Environmental Management (EM)
- Office of Nuclear Energy (NE)

Together, these offices integrate and facilitate accomplishment of DOE missions, facilitate leasing actions for both the GDP and GCEP leases, and support deployment of enhanced uranium enrichment technology via the ACP.

Along with the current active missions at Portsmouth, NE has initiated a Global Nuclear Energy Partnership (GNEP) to address Department of Energy strategic needs relative to the nuclear fuel cycle. The Portsmouth site is one of eleven sites that have received funding from the Department of Energy to study the suitability for hosting GNEP facilities. If the Portsmouth location is selected to host a GNEP facility, the current ongoing projects and activities would be revisited to coordinate with the development of GNEP capabilities.

## 1.1 SITE BACKGROUND

The Portsmouth site is a 3,714-acre federal reservation in south-central Ohio, one mile east of U.S. Route 23 in rural Pike County. The site is located approximately 75 miles south of Columbus, Ohio and 22 miles north of Portsmouth, Ohio. The nearest residential center is the village of Piketon (approximately 1,800 population), approximately five miles northwest of the facility on U.S. Route 23.

Construction of PORTS was completed in the mid-1950s by the U.S. Atomic Energy Commission. The facility was originally constructed and operated as a uranium enrichment plant to supply both highly enriched uranium (HEU) and low enriched uranium (LEU) for defense purposes and commercial nuclear fuel sales. After 1991, the gaseous diffusion plant (GDP) produced only LEU for commercial power plants.

The 1992 Energy Policy Act (1992 EPACT) initiated a process to privatize DOE's uranium enrichment enterprises. Initially, USEC was established to operate both the Portsmouth, Ohio and Paducah, Kentucky GDPs as a Government Corporation. In 1998, the privatization process of the company was completed when stock was offered for sale to the public.

In addition, this legislation assigned DOE with the D&D and remediation responsibilities for all three GDPs and created the Uranium Enrichment D&D fund (D&D Fund) to pay for the required D&D effort. The D&D fund is financed by DOE appropriations and assessments on nuclear utilities that had historically purchased enrichment services from DOE. The Secretary reported to Congress on the status of cleanup under the Fund in November 2007. (Uranium Enrichment Decontamination and Decommissioning Fund 2007 Report to Congress)

The 1992 EPACT also stated that the Portsmouth and Paducah GDPs were to be leased to USEC. The terms and conditions of the subsequent arrangement are contained in the lease agreement between DOE and USEC, dated July 1, 1993. The 1992 EPACT required that operations of the enrichment process are to be regulated by the NRC, which issued certificates of

compliance to USEC for both plants in November of 1996. In March of 1997, regulatory oversight for nuclear safety, safeguards, and security for the leased portions of both enrichment plants officially transferred from DOE to NRC with the following exceptions. At PORTS and PGDP, DOE retained regulatory oversight over personnel security and arming and arrest authority of the protective force. At PORTS, DOE retained regulatory oversight of USEC activities involving accessible uranium enriched to 10% or more.

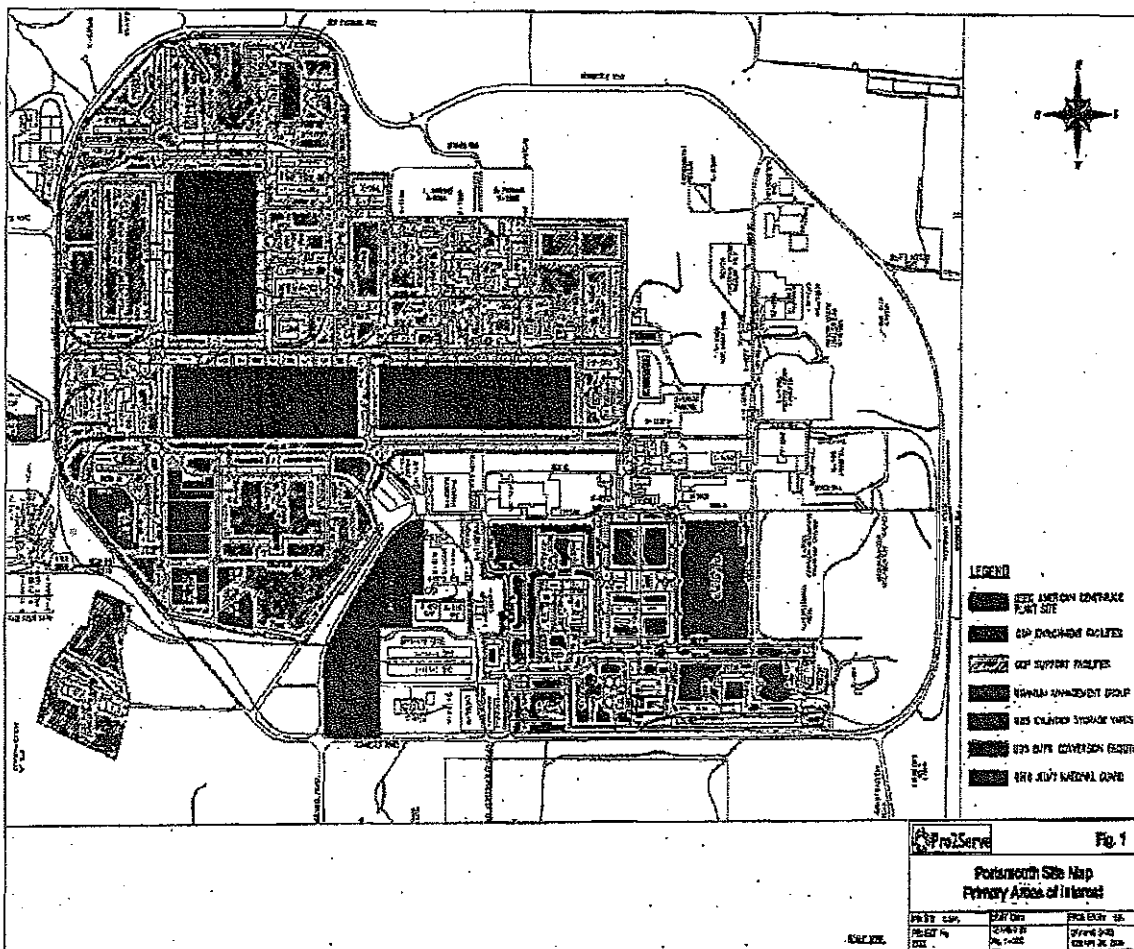
In May of 2000, USEC announced that enrichment operations at PORTS would cease in 2001. In addition, USEC announced its intention to terminate the lease at PORTS and return those facilities to DOE. DOE then decided that the GDP should be maintained in a status that would allow a cost-effective resumption of enrichment operations within 18 to 24 months. This decision was made to provide the United States with a strategic hedge in the event of a disruption in the international enriched uranium market. DOE contracted with USEC to maintain this capability under the Cold Standby (CSB) Program. The scope was performed under the Project Baseline Summary (PBS) PO-0101, "CSB Operations." Since then, the international market for enriched uranium has remained stable. Consequently, the Under Secretary of Energy approved the decision to terminate CSB effective September 30, 2005. Beginning October 1, 2005, the facilities were put in Cold Shutdown (CSD) as an interim measure while D&D activities and timing were planned and evaluated.

In 2003, PORTS was selected by USEC as the location for deployment of a new commercial centrifuge uranium enrichment plant (i.e., The "American Centrifuge Program") by the end of the decade. The US Nuclear Regulatory Commission approved a 30 year ACP construction and operations license in April of 2007. Prototype machines were installed in the summer of 2007. An August 2007 USEC press release announced that the prototype machines were operating with uranium hexafluoride gas at operational speeds and that testing was underway to link the individual machines together to demonstrate the lead cascade capability of the centrifuge plant by October 2007. Testing of the new machines is to be conducted through the end of 2008. Initial commercial operations are scheduled for late 2009. The ACP is projected to reach a capacity of 3.8 Million Separative Work Units (SWU) by 2012.

## **2. SITE RESPONSIBILITIES UNDER THE DOE STRATEGIC PLAN**

As previously noted, a variety of mission activities are currently underway at the Portsmouth site. EM, NE, and USEC all have responsibilities contributing to the mission and success of the site as a whole. This section addresses projected business lines, interrelationships, events, and considerations surrounding both the current activities and programs, and projected future roles and responsibilities. Figure 1 is a color coded map of the site that identifies the major facilities and missions.





## 2.1 DOE PROGRAM OFFICES AND DESCRIPTION OF WORK FOR EACH PROGRAM

### 2.1.1 EM Program Office

The Office of Environmental Management has had LPSO type responsibilities for the Portsmouth and Paducah sites since May 23, 2003. EM's mission at Portsmouth is the execution of the environmental cleanup program. Historically, the uranium enrichment program generated various hazardous, non-hazardous, and radioactive wastes. Normal process activities resulted in contamination of equipment, facilities, soil, and groundwater with radioactive and hazardous constituents. Consequently, significant quantities of radioactive, hazardous, and mixed waste, referred to as legacy waste, were generated.

Current EM programs include:

- Depleted Uranium Hexafluoride (DUF<sub>6</sub>) Conversion Project
- Environmental Remediation/Waste Management
- Tc<sup>99</sup> Contaminated Feed Program
- Cold Shutdown
- Infrastructure Management/Site Services
- GDP D&D and Remediation Project

EM missions at Portsmouth are aligned with the 2006 DOE Strategic Plan's goal to complete the cleanup of contaminated nuclear weapons manufacturing and testing sites across the U.S.

### DUF<sub>6</sub> Conversion

In 2002, a contract with UDS was awarded to design, construct, and operate facilities at the Portsmouth and Paducah Sites to convert the government's inventory of DUF<sub>6</sub> to a more stable form for disposal and/or reuse (see Figure 2). UDS is responsible for maintaining the depleted uranium product inventories and the receipt of depleted uranium from Oak Ridge, Tennessee to the Portsmouth, Ohio plant for conversion. At Portsmouth, UDS assumed S&M responsibility for all DOE cylinder management in FY 2005. The conversion facility is scheduled for completion in the Spring of 2008. This will be followed by testing and an operation readiness review. Operations will commence following the conclusion of the readiness review.

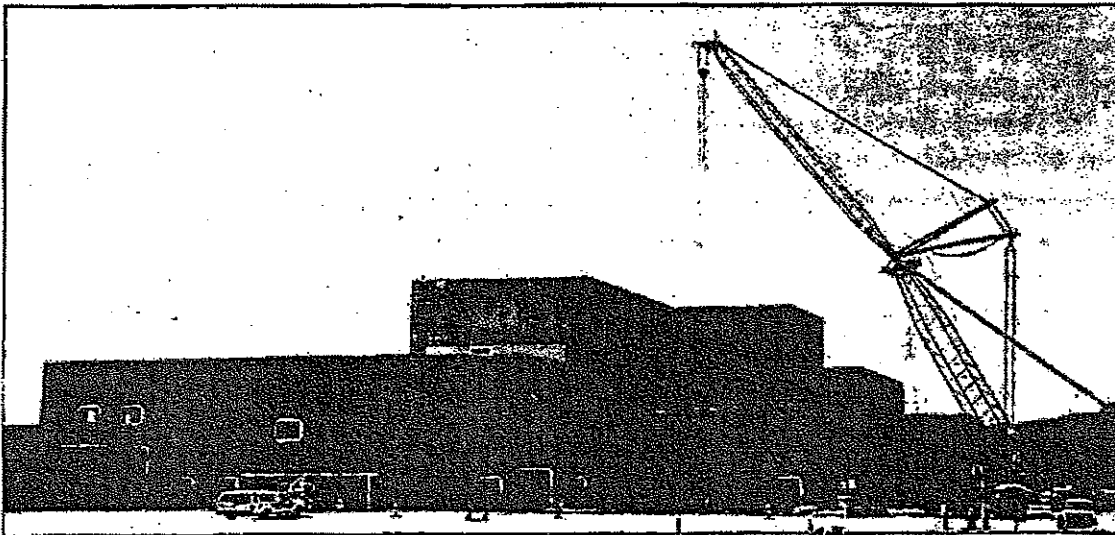


Figure 2. DUF<sub>6</sub> construction site.

### Environmental Remediation/Waste Management

In 2005, to facilitate remediation and legacy waste disposal, EM awarded two contracts. These awards include a remediation contract (contract number DE-AC24-05OH20192) awarded to LPP and an infrastructure services contract (contract number DE-AC24-05OH20193) awarded to TPMC. EM is planning new procurements for D&D of the diffusion plant process facilities. The D&D project is planned to be initiated in conjunction with the completion of the current cascade based DR and Tc<sup>99</sup> programs.

The LPP remediation contract includes remedial actions to address contaminated environmental media [e.g., soils, groundwater, landfills (excluding the deferred units), and disposal of the remaining legacy waste]. The remediation contract also includes recovery and disposal of HEU material through a multi-party agreement with Nuclear Fuel Services, Inc. (NFS). In addition, cleanup activities include 14 excess, non-leased facilities for D&D and disposal. The LPP contract period of performance is scheduled for completion in 2009. As noted earlier, the final D&D of the larger GDP will require a series of separate and distinct future contracts.

LPP also manages the Portsmouth EM Uranium Program through a Uranium Management Group (UMG). The program includes storage of depleted uranium and other uranium bearing materials from other DOE sites and university studies. (see Figure 3). This program secures a central repository for these DOE materials.

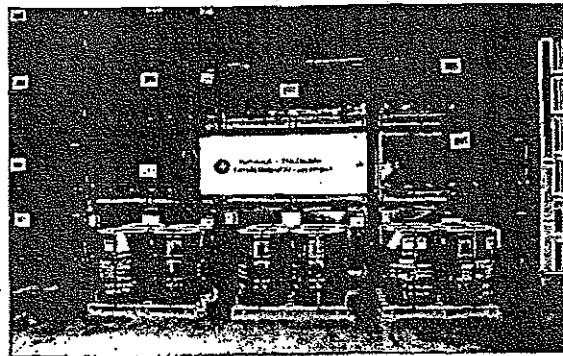


Figure 3. UMG operations.

In addition, EM Uranium Programs oversees HEU management responsibilities, including the management of inventories of Special Nuclear Materials, oversight of the S&M of the 158 permanently shut down cells in the X-326 Process Building and management of 12 DOE Material Storage Areas. The HEU activities also encompass management and technical support for HEU material storage and processing for recovery at Nuclear Fuel Services (NFS), as well as, disposal of HEU-Resource Conservation and Recovery Act (RCRA) material.

Likewise, LPP has also been involved with Gas Centrifuge Enrichment Plant (GCEP) cleanout activities. In previous years, EM had modified some of the buildings constructed for GCEP for use as Resource Conservation and Recovery Act compliant waste storage. Portions of these same facilities were selected by USEC to be utilized to support the deployment of the Centrifuge Lead Cascade as a technology demonstration project at PORTS. As a direct result, beginning in FY 2004, EM accelerated cleanout of equipment and waste from the facilities that are required by USEC to support the test demonstration of the Centrifuge Project Lead Cascade (see Figure 4). LPP performed this work and completed the project ahead of schedule and under cost in FY 2007. The facilities have been transferred to USEC for ACP commercial operations at PORTS.

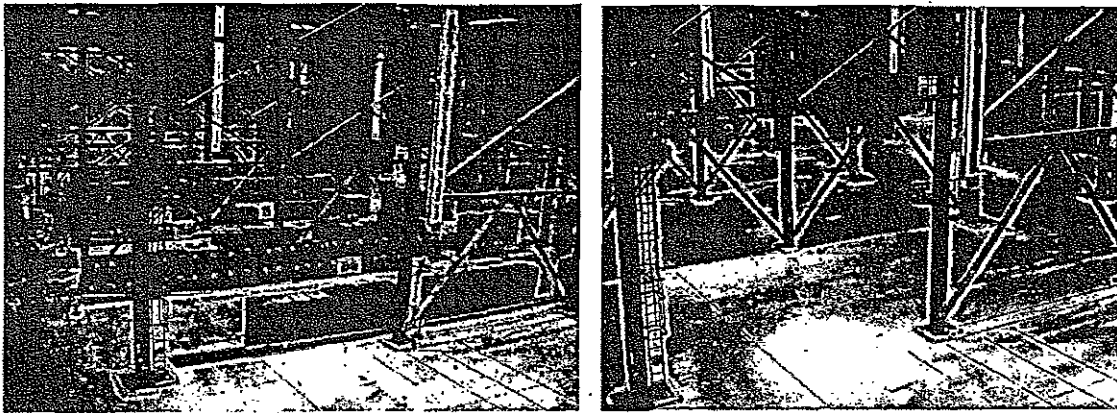


Figure 4. GCEP cleanout.

### **Tc<sup>99</sup> Contaminated Feed Program**

Additional USEC services have been retained under a separate service agreement with DOE for performance of the Tc<sup>99</sup> removal activities. This program facilitates elimination of existing liabilities through the removal of Tc<sup>99</sup> contamination from uranium feedstock, creating usable materials for the nuclear industry. The Tc<sup>99</sup> contaminated feed is currently funded through "uranium sales" conducted in accordance with section 314 of the 2006 Energy and Water Development Appropriations Act. Current projections show that Tc<sup>99</sup> removal activities will be completed in late 2008 or early 2009.

### **Cold Shutdown (CSD)**

During Cold-Standby (CSB), the Department continued to monitor the international enriched uranium market. The market remained stable and the decision was made to terminate CSB at the end of FY 2005. As an interim measure as part of the Department's efforts to adequately plan for Congressionally mandated D&D of the GDP, the CSB contract with USEC was restructured into a Cold Shutdown contract. Activities include risk reductions through Deposit Removal and S&M of the GDP facilities and their inventories. The Department

approved Critical Decision -1 for the Portsmouth D&D Project in August 2007. The Department is in the acquisition planning phase for the future D&D contracts. The Department will continue surveillance and maintenance of the GDPs until new contracts are awarded through adequate competition to proceed with the D&D project.

### **Infrastructure and Site-Wide Services**

The site infrastructure supports the two major program objectives at the Portsmouth site, uranium enrichment and environmental clean-up including depleted uranium conversion and D&D of excess facilities. Infrastructure services and maintenance of the physical infrastructure are provided by USEC and TPMC. DOE obtains the majority of infrastructure and site-wide services from USEC. Services provided by USEC include: Fire Protection, Emergency Management, Plant Production and Security Program Management, Utilities, Nuclear Material Control and Accountability, Computer Services, Telecommunications, Respirator Services, HEU Surveillance and Maintenance, Janitorial, Maintenance, Environmental Base, Safety and Health, Analytic Laboratories, and Cylinder Handling.

DOE also obtains some infrastructure services from TPMC. These services include Surveillance and Maintenance of Facilities (limited to a select number of facilities), Janitorial Services, Roads and Grounds Maintenance, Computing, Telecommunications, and Environmental Safety and Health Program Support.

Historically USEC has been the prime supplier of infrastructure and site-wide services. USEC provided the majority of infrastructure services during the periods when the company leased and operated the GDP to actively enrich uranium and also during CSB and CSD. GDP enrichment operations have been terminated by USEC, DOE programmatic site missions are being concluded, and significant portions of the GDP originally leased to USEC will be returned to the DOE for D&D pursuant to the specific terms of the lease agreement. In addition, utility and service requirements have changed dramatically due to the cessation of GDP enrichment operations. All of these changes necessitate the need to conduct a restructuring and "right sizing" of the historical infrastructure and site-wide services support. DOE and USEC will work together to ensure that the future infrastructure will adequately support the DOE depleted uranium conversion project, the DOE D&D project, and the USEC ACP. The DOE will include the infrastructure considerations in future procurement planning.

### **GDP D&D and Remediation Project**

In October 2005, the Deputy Secretary of Energy approved CD-0, *Mission Need*, for D&D of PORTS. The Department performed the necessary additional planning for CD-1 during 2006 and 2007. The planning included analysis of alternatives, conceptual design, regulatory strategy, public and stakeholder participation planning, risk management, and safety documentation. The US Army Corps of Engineers was tasked to develop a new set of Independent Government Cost estimates for the Portsmouth [and Paducah] D&D work. In addition, the personnel working on the Portsmouth project were deliberate in seeking out lessons learned from other cleanup projects

with particular attention to the East Tennessee Technology Park/K-25 Three Building D&D Project and the subsequent ETTP closure project.

In August 2007 CD-1 for the Portsmouth D&D and remediation project was approved to establish the Cost Range and to describe the selected alternative. The conceptual planning that was performed in preparation for CD-1 has included the comprehensive scope of the D&D project. This scope will ultimately fulfill the Department's obligations under the 1992 EPACT at the Portsmouth site.

The conceptual schedule to initiate and conduct the project is to conduct transition, deactivation, and competitive acquisition activities through 2009 and begin transitioning to decommissioning in 2009, with project completion conservatively scheduled for 2044-2052 depending upon a number of factors. The transition and deactivation period includes: developing DOE compliant materials for nuclear and industrial safety, and the competitive acquisition of a contractor to initiate the D&D and remediation work. The long schedule for the project indicates that multiple contracts will be necessary to complete the cleanup. The estimated cost range for this project is estimated to be \$5 to \$12 Billion; however, the cost estimate and the project baseline will be refined during the development of a performance baseline that will be prepared for CD-2.

An Integrated Project Team has been formed to plan for the contracts that will initiate the Portsmouth D&D and remediation project. The team will prepare Acquisition Plan(s) for the initial contracts for the project. The Acquisition Plans will identify issues, discuss the transition process, and outline various acquisition alternatives in order to inform decision-makers. The team has concluded that the unique situation at the Portsmouth site warrants careful planning and analysis in order to establish the initial contracts that will set the stage for a long term cleanup project.

The Portsmouth D&D project has been designed to be consistent with DOE's requirements under the 1992 EPACT. In addition, the Portsmouth D&D project is consistent with the DOE strategic goal to complete the cleanup of the contaminated nuclear weapons manufacturing and testing sites across the U.S.

#### **2.1.2 NE Program Office**

The 1992 EPACT stated that the Portsmouth and Paducah GDPs were to be leased to USEC. The GDP Lease between USEC and DOE is administered under the direction of NE. USEC reimburses DOE/NE for the lease administration activities. Lease changes required for the ACP and the eventual return of the GDP are facilitated through NE.

NE serves as the administrator of the leases with USEC and is the Program Secretarial Office for USEC-related policy functions at the site. As such, NE is responsible for addressing USEC-related policy issues at Portsmouth and Paducah, including the commercial aspects of the HEU Purchase Agreement between the United States and the Russian Federation and the supply of fuel to domestic nuclear reactors. In addition, NE is responsible for providing DOE regulatory

oversight of certain USEC activities in leased areas not regulated by NRC, and interfacing with NRC. The interface with NRC includes participation in the certification and regulatory process (e.g., coordination of regulatory activities, emergency management, and information exchange).

In 2003, the Portsmouth site was selected by USEC as the location for deployment of a commercial centrifuge plant by the end of the decade. NE provides both programmatic and regulatory interface with the NRC regarding lead cascade operations and commercial plant deployment. These functions serve to promote and implement the 2003-DOE Strategic Plan energy goal: "To protect our national and economic security by promoting a diverse supply and delivery of reliable, affordable, and environmentally sound energy." A Supplemental Lease Agreement was signed on December 7, 2006 to outline the lease terms of DOE GCEP facilities at Portsmouth that will be used by USEC to deploy the American Centrifuge Plant. The Supplemental Lease Agreement is generally referred to as the GCEP Lease.

The Office of Nuclear Energy has also initiated a Global Nuclear Energy Partnership (GNEP) to address Department of Energy strategic needs relative to the nuclear fuel cycle. The Portsmouth site is one of eleven sites that have received funding from the Department of Energy to study the suitability for hosting GNEP facilities. If the Portsmouth location is selected to host a GNEP facility, the decontamination, decommissioning, and remedial action schedules for specific areas of the site may need to be revisited to coordinate with the development of GNEP capabilities.

## **2.2 USEC OPERATIONS**

The primary mission/business of USEC is enrichment of uranium. USEC now leases Gas Centrifuge Facilities in the Southwest quadrant of the Portsmouth site as its main future enrichment facility (the American Centrifuge Plant). New technology centrifuge machines have been tested in Oak Ridge and are now installed in the Portsmouth GCEP facilities for additional operational testing. USEC has prepared an NRC license application and the 30 year construction and operations license was approved in April 2007. The lead cascade testing program was initiated in August 2007. Additional testing is planned for 2008. Commercial operations are scheduled to begin in late 2009 and additional enrichment machines are slated to be installed in the existing building in 2010 through 2012. The existing buildings would be full in 2012. USEC has indicated that it will be evaluating the market over this time period. If conditions warrant future investment, additional buildings could be constructed to house additional enrichment equipment. The plant was originally conceived to accommodate future expansions in capacity and additional modular buildings can be constructed further south of the original facilities without dramatically impacting other site activities.

Although several changes have occurred in the original GDP lease between DOE and USEC, the most significant were made as the result of the USEC selection to use existing GCEP facilities for the ACP. A lease for the advanced centrifuge technology deployment (GCEP lease) was signed by the Chairman of USEC and Secretary of Energy and became effective on December 7, 2006. The GCEP lease is an appendix to the original GDP lease. The GCEP lease

identifies the facilities that have been leased to USEC to date to support the American Centrifuge Project.

The ACP is geographically separate from the GDP portion of the plant. However, there are shared utility systems and site services that currently serve the multiple site tenants. In addition, USEC has indicated an interest in continuing to lease some of the old GDP facilities to support the ACP project. The DOE D&D plans have accounted for these possibilities.

Following the USEC decision in 2000 to cease uranium enrichment (by gaseous diffusion) at Portsmouth, DOE contracted with USEC to implement the CSB Program for most of the PORTS facilities required for gaseous diffusion enrichment in 2001. The CSB program was completed in 2005. In FY 2006, the Cold Shutdown program was established as an interim extension of the CSB contract with USEC while DOE planned for the near term future of the Portsmouth GDP facilities. The Cold Shutdown activities and the Infrastructure activities have been discussed earlier in this section as EM funded activities that USEC has performed.

Prior to turnover of USEC-leased facilities to DOE, lease deactivation requirements will have to be met, potentially including termination/segregation of key infrastructure utility systems from/within currently-leased buildings. During this period, NE will balance requested USEC lease changes with the overall DOE programmatic needs in light of the DOE future missions for the site. Figure 5 is an organizational chart that describes the relationship of the DOE and USEC Missions at the Portsmouth Site.

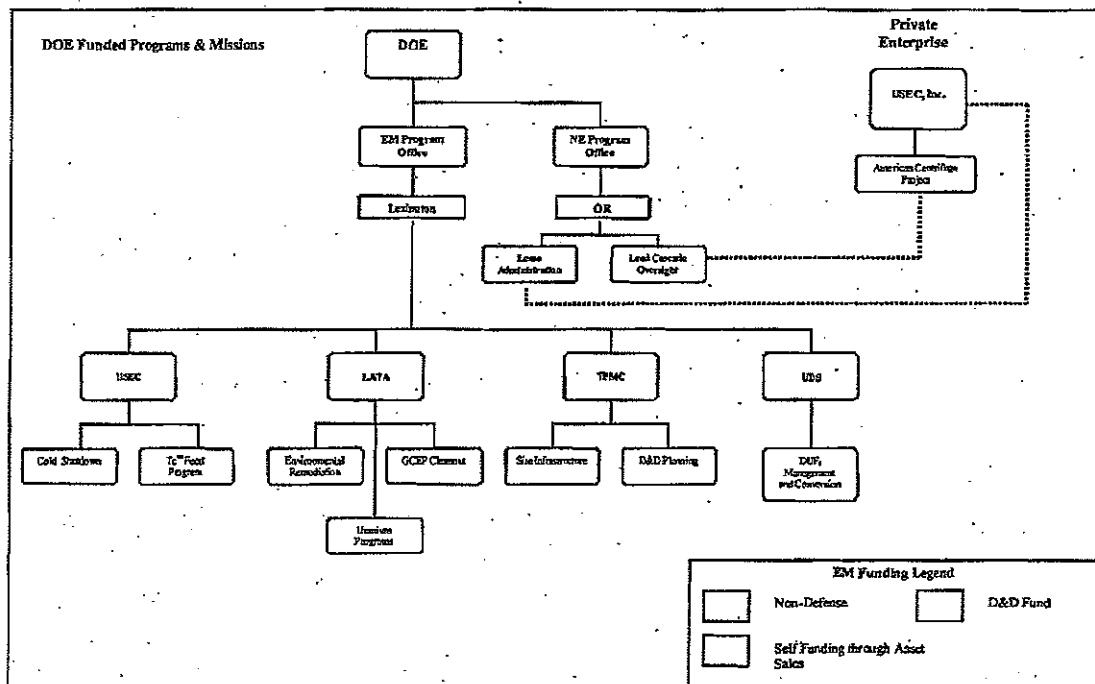


Figure 5. DOE and USEC missions at the Portsmouth Site.



### **3. SITE PROGRAM INTEGRATION**

#### **3.1 INTERRELATIONSHIPS AMONG BUSINESS LINES**

The interrelationships at the Portsmouth site are complex. The main focus of the complex interrelationships at Portsmouth involves the GDP facilities, the GDP systems, and the GDP areas. The site was functioning as a DOE owned and contractor operated site prior to 1992 when the decision was made to privatize the United States uranium enrichment function. USEC, as a government corporation, leased the GDP facilities in 1993, following the Energy Policy Act of 1992. The USEC Privatization Act became law in 1996, and privatization of USEC was completed in 1998. Prior to privatization, various aspects of USEC's operations were regulated by DOE, NRC and OSHA. NRC issued Certificates of Compliance to USEC in 1996. USEC was responsible for running the enrichment plant and most of the ancillary systems. The main DOE missions at that time were remediation of accessible contaminated solid waste management units and the administration of the lease. These arrangements were all in keeping with the terms of the 1992 Energy Policy Act which created USEC as an entity and also created the D&D Fund to address the D&D liabilities at Portsmouth, Paducah, and Oak Ridge.

In 2000, USEC announced a corporate business decision to cease uranium enrichment operations at Portsmouth. Shortly thereafter, the Department announced a strategic decision to maintain the plant in a manner that would allow a restart if necessary. The Department paid USEC to perform the Cold Standby Program to maintain the restart capability. The lease was not terminated, but a few facilities were transferred from USEC operation to DOE operation. The USEC and DOE decisions and the activities to implement them have led to a complex situation in which the site now conducts operations through a combination of leases, contracts, private sector businesses, DOE regulations, NRC regulations, and OSHA regulations.

The Cold Standby program was terminated in 2005, and the Department also formally acknowledged the requirement (Mission Need) for D&D at Portsmouth in accordance with the Energy Policy Act. A follow-on Cold Shutdown program was established to maintain S&M of the facilities and their inventories while the Department evaluated D&D alternatives, funding requirements and project start dates and timing. The lease and the NRC and OSHA regulation are all still in place. The combination of leases and contracts are outlined in section 6 of this SUMP. In August 2007, the Department decided to proceed with D&D.

The process to initiate D&D will eventually reduce the complexity of the inter-relationships. In the intermediate term the main business lines at the site will have been reduced to three components.

- The DOE Depleted Uranium Project
- The DOE D&D and Remediation Project
- and
- The USEC American Centrifuge Plant

The GDP lease contains terms governing USEC's return of leased premises and leased personalty. Specific procedures for the de-leasing of the large number of GDP facilities and resuming DOE regulation over de-leased facilities will need to be developed. In addition, the processes whereby the main business lines obtain their utilities and site services will need to be developed in a way that is cost effective and equitable to these ongoing missions.

### 3.2 INTERNAL EVENTS

The primary internal events expected to affect site operations are:

- de-leasing and transfer of facilities from USEC and NRC/OSHA regulation to DOE control and regulation;
- completion of construction and initiation of operations of the cylinder management and DUF<sub>6</sub> conversion facilities by UDS;
- USEC development and deployment of the centrifuge project lead cascade and potential construction of the ACP;
- completion of the Tc-99 cleanup project;
- completion of the Cold Shutdown contract and transition to a new contract(s) for D&D, remediation, and landlord operations;
- completion of the current EM small business cleanup and infrastructure contracts.

The de-leasing and transfer of facilities from USEC control and NRC and OSHA regulation to DOE administrative control and regulation will be a significant exercise. DOE will need to make sure that it is satisfied with the adequacy of plans and procedures to protect workers, materials, and facilities. The existing work force will also be concerned that the changes may lead to lay-offs, confusion, and possibly un-safe conditions.

The completion of the DUF<sub>6</sub> conversion facility will be a major milestone at the site. The shift to operations and an increase in cylinder handling will need to be carefully managed and coordinated with other site activities.

The deployment of the ACP lead cascade will also be a significant milestone for USEC. The testing of the prototype machines will provide the data that are necessary to demonstrate the technical and cost effectiveness of the technology. The construction of the ACP would be a welcome development at the Portsmouth site. However, new construction activities also increase safety risks and coordination requirements.

The completion of the Tc-99 project will finish the conversion of un-usable uranium feed-stock to a valuable asset for future enrichment. The project has been funded by Congressionally authorized sales of Uranium. However, the completion of the project could lead to a furlough of involved workers and force a re-distribution of site overhead costs.

The completion of the Cold Shutdown contract and the transition to a D&D, remediation, and landlord contract will mark one of the most significant mission changes in the history of the

Portsmouth plant. The completion of Cold Shutdown will most probably include the cessation of all cascade operations.

The final noted event is the completion of the current remediation and infrastructure contracts. The current remediation scope will have been completed, but the Site will need to evaluate and coordinate contract and acquisition options for the future infrastructure services activities.

### **3.3 EXTERNAL EVENTS AND LOCAL AREA CONSIDERATIONS**

In relation to external events and local area considerations, the public has requested access and use of a secondary road within the site boundary. The Department agreed to upgrade the road to meet Department of Transportation requirements to address the public's request. Upgrades were initiated in August 2007 and a ribbon cutting ceremony was conducted in November 2007 to complete the project.

Socio-economic impacts resulting from the changing site missions have been a primary concern in the local community. The plant and the contractors have generally been good corporate citizens in the local community and the plant has provided good jobs in this depressed area since construction was initiated in 1952.

There are some residents in the community who are concerned that the plant has been unsafe for workers and has negatively impacted the off-site environment. There is also some apprehension and misunderstanding over the presence of an "atomic plant" in the area.

The evaluation of Portsmouth as a potential site for GNEP has elicited a mixture of support and a relatively well organized amount of opposition to a potential "nuclear waste dump" in an economically depressed area.

There is a local community re-use organization that is interested in utilizing the plant site and infrastructure for future industrial activities. The local community does not have a formally organized citizens' advisory board at the present. However, a local organization board may be formed to consult with the Department as the D&D and remediation proceeds.

The public has had opportunities to participate in formal community meetings that have been held for various projects at the site. The Department holds public meetings for EM activities. The NRC has held public meetings to report on GDP operations under the certificate for operations. The NRC has also held public meetings for the proposed licensing of the ACP plant. The consideration of the GNEP proposal also included a number of public meetings. Some members of the public have been frustrated by the limited scope of the various public meetings due to the different organizations that are holding them.

### **3.4 PROGRAM BUDGET OUTLAY**

At PORTS, funds are allocated by DOE Headquarters through the applicable program office, authorized by the DOE PPPO, and obligated by the Environmental Management Consolidated Business Center. The EM Program Accounts for DOE PPPO are as follows:

- Uranium Enrichment Decontamination & Decommissioning Fund (UE),
- Non-Closure Environmental Cleanup (operating) (UX),
- Safeguards & Security (TP), and
- Non-Closure Environmental Cleanup (line item) for DUF<sub>6</sub> construction (UX).

Table 1 outlines the Project Baseline Summary (PBS) Structure as described in the Portsmouth Site Life Cycle Baseline and outlines the projected funding levels consistent with the March 2007 EM Five Year Plan. The March 2007 EM Five-Year Plan includes funds to support the Portsmouth D&D Project consistent with the CD-1 proposal.

**Table 1. Portsmouth Five-Year Plan Funding Summary  
(in 000s)**

PBS	Description	2007	2008	2009	2010	2011	2012
PO-0011*	Nuclear Material Stabilization and Disposition	\$21,515	\$7,754	\$8,564	\$3,955	\$4,016	\$0
PO-011X**	DUF <sub>6</sub> Conversion	\$52,511	\$13,000	\$34,106	\$34,084	\$28,292	\$35,875
PO-0013	Solid Waste Stabilization and Disposition	\$19,410	\$34,313	\$25,000	\$50,000	\$25,000	\$0
PO-0020	Safeguards and Security	\$15,642	\$11,667	\$12,092	\$12,000	\$12,000	\$12,000
PO-0040	Environmental Remediation/Nuclear Facility D&D	\$131,202	\$170,838	\$174,276	\$183,952	\$183,665	\$212,869
PO-0103	Community and Regulatory Support	\$410	\$720	\$635	\$651	\$668	\$684
PO-0104	Post-Closure Liabilities/Administration	\$298	\$556	\$313	\$321	\$329	\$338
<b>Total</b>		<b>\$240,988</b>	<b>\$238,848</b>	<b>\$254,986</b>	<b>\$284,963</b>	<b>\$253,970</b>	<b>\$261,766</b>

\*PO-0011 includes \$2M for the GCEP project in FY2007.

\*\* PO-0011X values include construction and operating funding for the DUF<sub>6</sub> conversion project.

#### 4. CHANGE CONTROL

The opportunity to refine the contract incentives and establish the administrative oversight in the PPPO will enhance the Government's ability to execute the infrastructure and remediation contracts at Portsmouth. All work is and will be managed in accordance with DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets* and the terms and conditions of the appropriate contract. PBSs are used to track and control work activities and variances. Also, formal project management systems are utilized with emphasis on a rigorous earned value management system. Baseline change control procedures will be put into place to ensure that DOE controls changes to the planned work and addition of unexpected work to the baseline. Changes and newly identified work scope will be evaluated for either inclusion in an existing contract or for a future acquisition, as appropriate. Risk management plans will be developed and utilized to assist management in being proactive to these types of issues, as they develop.

Currently, D&D planning is being performed in accordance with requirements of DOE Order 413.3A. Until actual D&D work is initiated, S&M activities will be performed in accordance with guidelines from DOE G 430.1-2, *Implementation Guide for Surveillance and Maintenance During Facility Transition and Disposition*. Criteria for S&M activities will include requirements to ensure adequate containment of contamination, provide physical safety and security control, inspect and maintain the facilities in a manner that will eliminate or mitigate hazards to workers, the public, and the environment. To accomplish this work, a graded approach to the application of requirements will be utilized.

#### 5. INFRASTRUCTURE

The Portsmouth facility is now the largest facility in terms of square footage in the DOE complex. The massive facility was originally constructed in the 1950s. The infrastructure was sized to support the massive and energy intensive gaseous diffusion plant. The plant at full operations was said to require more electrical power than Cleveland. The electrical system includes two massive switchyards. In addition, the plant includes scores of cooling towers to dissipate the process heat. The cooling water system and pumping requirements were also sized to support the gaseous diffusion enrichment process. The site also has a dedicated coal fired steam plant. The plant utilities include:

- Dry air
- Nitrogen
- Potable water
- Fire suppression water
- Cooling Water
- Steam
- Electric power
- Sewer

In summary, many of the plant infrastructure elements are massively over-sized for the current requirements. In addition, most of the systems are antiquated. The large electrical power requirements were a significant consideration that factored into the USEC business decision to halt uranium enrichment in 2000. USEC continues to provide the majority of site-wide services. These are provided through the terms of the USEC Lease and through the CSD contract. Major services provided include:

- Protective Force Services,
- Nuclear Materials Control and Accountability,
- Fire and Emergency Management,
- Utilities,
- Criticality Accident Alarm System,
- Telecommunications,
- Non-destructive Analysis Measurements, and
- Records Management.

The Infrastructure requirements, capacities, and options are currently being examined by the site. The site is currently working to reconfigure the electrical system at the plant. The site will be identifying additional approaches to optimize the infrastructure to improve cost efficiency without creating undue negative impacts on the ongoing major operations. The infrastructure optimization will include coordination with all major organizations at the site.

## **6. CONTRACTUAL CONFIGURATION**

Currently, DOE responsibilities at PORTS are accomplished by four prime contracts. In addition, USEC is operating as a fully private business at the ACP. (USEC is operating as a private business under a DOE contract in the GDP areas.) The color-coded map on page 3 (Figure 1) of this plan illustrates the primary geographical areas of interest at PORTS that are being used by each of the prime contractors and lease holders to accomplish these tasks. The organization chart on page 11 (Figure 5) of this plan provides insight into the organizational structure of the various contractors and lease holders.

The four prime contracts are as follows:

- USEC, Contract Number DE-AC05-01OR22877, is a cost-plus fixed-fee CSB extension contract. USEC is responsible for maintaining the GDP in CSD with responsibilities for DR. The Tc<sup>99</sup> Cleanup Program is performed under a service agreement (Memorandum of Understanding). CSD and Tc<sup>99</sup> cleanup activities are expected to continue through September 2008.
- LPP, Contract Number DE-AC24-05OH20192, is a cost-plus incentive-fee contract for performance of environmental management activities including remedial actions on environmental media [e.g., soils, groundwater, and landfills], and disposal of the remaining

legacy waste. The remediation contract also includes the completion of the HEU program through a multiparty agreement with NFS to perform recovery and disposal actions on the currently stored HEU material. In addition, clean-up activities include 14 excess, non-leased facilities for D&D and disposal. The period of performance for this contract is June 2005 through September FY 2009.

- TPMC, Contract Number DE-AC24-05OH20193, is a cost-plus award-fee contract. TPMC is responsible for supporting facility S&M, site security, road and ground maintenance, janitorial services, information technology, real and personal property inventory and disposition, litigation support, environmental safety and health, pollution prevention services, and sanitary waste disposition, as well as, operation of the alternative heating boiler system for DOE facilities. The completion date of the contract is March 15, 2010.
- UDS, Contract Number DE-AC05-01OR22717, is a cost-plus incentive-fee contract for the design, construction, and operation of a plant to convert DUF<sub>6</sub> to a more stable form. Construction is scheduled for completion in Spring 2008. Operations will commence following a period of testing and readiness review.

The contractual situation at the Portsmouth site provides a partial view of the inter-relationships. The lease arrangements with USEC also need to be outlined in order to fully understand the current methods for providing and receiving services. DOE and USEC are parties to two leases at the Portsmouth site. The first lease was executed in 1993 in order to carry out the Congressional direction for the Department and USEC from the 1992 Energy Policy Act. This lease is referred to as "the GDP lease." The GDP lease includes a section (Exhibit F) that outlines the site services that the Department and USEC will provide and make available upon request. The providers of these services are obligated to make these services available to other entities on the site, but the other entities have the option of obtaining these services from other sources. The specific financial and logistical arrangements of the provision of services are defined in a Memorandum of Agreement for Services. A second lease was executed on December 7, 2006, to address the leasing of facilities that USEC will use in the ACP. The second lease is documented as an appendix to the original lease, and it is referred to as the "GCEP lease." The current term of the GDP lease is through July 2010, but USEC has the exclusive right to continue to renew the lease indefinitely. The current term of the GCEP lease is through June 2009, but this lease can be extended through 2045.

The significant contracts and lease arrangements at Portsmouth are given in Table 2.

**Table 2. Contracts and Lease Arrangements**

<b>Contractor/Lessee</b>	<b>Scope of Work</b>	<b>Performance Period</b>
USEC (contract)	Cold Shut Down services; Deposit Removal and Surveillance and Maintenance of leased GDP facilities	through September 2008
USEC (MOA)	Decontaminate un-usable uranium feedstock to remove Technetium-99	through October 2008
USEC (GDP lease) (Exhibit F (Memorandum of Agreement between the United States Department of Energy and United States Enrichment Corporation for the Supply of Services) ); (Agreement for Services Between the United States Department of Energy and the United States Enrichment Corporation)	Various site-wide utility and infrastructure services; includes: Protective Force Services; Nuclear Materials Control and Accountability; Fire and Emergency Management; Utilities; Criticality Accident Alarm System; Telecommunications; Non-destructive Analysis Measurements; and Records Management	Services provided upon request
LATA/Parallax Portsmouth (LPP)	Environmental Remediation, limited D&D, waste disposal	through September 2009
Theta Pro2Serve Management Company (TPMC)	Infrastructure services	through March 2010
Uranium Disposition Services (UDS)	Depleted Uranium Hexafluoride Conversion; construction of conversion facilities and operation	through February 2011



